

civil engineering  
structural design  
land surveying

## ***STORM WATER MANAGEMENT PLAN***

Permit No. **TPM 20820**  
**A.P.N. 189-012-68**

Project Name: **SOURIS TPM**

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### ATTACHMENTS

- A. Vicinity Map and Tentative Map (Project map)
- B. BMP Datasheets/ BMP Map
- C. Watersheds and Surface Water Bodies within project area
- D. Hydrology and Hydraulics Calculations
- E. Homeowners' Educational Material

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Site Map	X	
C	Relevant Monitoring Data		X
D	Treatment BMP Location Map	X	
E	Treatment BMP Datasheets	X	
F	Operation and Maintenance Program for Treatment BMPs	X	
G	Fiscal Resources	X	
H	Certification Sheet	X	
I	Addendum		X

**Note:** Attachments A and B may be combined.

## INTRODUCTION

The Stormwater Management Plan (SWMP) is required under the County of San Diego Watershed Protection, Stormwater Management, and Discharge Control Ordinance (section 67.817). The purpose of this SWMP is to address the water quality impacts from the proposed 4-parcel split for A.P.N. 189-012-68. Best Management Practices (BMPs) will be utilized to provide a long-term solution to water quality. This SWMP is also intended to ensure the effectiveness of the BMPs through proper maintenance that is based on long-term fiscal planning. The SWMP is subject to revisions as needed by the engineer.

### 1.0 Project Description

The proposed 4-lot minor residential subdivision ranging in size from 4.18 acres to 21.47 acres, totaling 39.5 acres are located at 14174 Calle De Vista off of Valley Center Road in the Valley Center planning area of the County of San Diego (See Attachment A). The project is approximately 0.9 miles east of Valley Center Road on Calle De Vista. This project is comprised of a proposed four-parcel split, which will divide A.P.N. 189-012-68. The proposed impervious surface is approximately 2.93 % of the project site. The existing impervious area is approximately 1.47% of the 39.5-acre parcel, making a total impervious surface of 4.4% of the total 39.5 acres. A grading permit will be the only permit requested.

### Topography and Land Use

The project area is mainly characterized by Chamise Chaparral and Coastal Sage. Parcels in the area are considered to be rural residential lots. Parcels in the area are all the same, Building Type C, General Plan Designation 17, Height G, Setbacks C, Use Regulation A70, Animal Regulations L, and minimum lot size is no less than 2 acres. Parcels researched in the area have the APNs of 189-012-69, 189-021-06, 10, 15, and 16, 189-141-11, 14, 15, 16, 17, 21, 22, 23, 24, 25, 26, 27. A County of San Diego topography map of the site is provided within the Hydrology Study (Attachment D) of this report. Site slope analysis results are as follows.

SLOPE RANGE	AREA	PERCENT OF TOTAL ACREAGE
0%-15%	11.86 Ac	25.6
15%-25%	10.63 Ac	28.2
25%-50%	13.06 Ac	38.9
50%-100%	3.95 Ac	7.3

### 1.1 Hydrologic Unit Contribution

A.P.N. 189-012-68 is located in the Valley Center Hydrologic Subarea (903.14) and the Rincon Hydrologic Subarea (903.16) within the Lower San Luis Hydrologic Area (903.10) in the San Luis Rey Hydrologic Unit. The project area is mainly vacant land with the exception of an existing single-family residence and guesthouse on proposed parcel 3. The storm drain system for this project will discharge into existing natural channels along the south and northeast boundary of the property that feed into the San Luis Rey River and eventually into the Pacific Ocean. The San Luis Rey River is approximately 4 miles from the project site. The project site comprises less than 0.038% of the Bonsall Hydrologic Subarea (903.12).

The proposed project will not significantly alter drainage patterns on the site. The storm water discharge points will not divert runoff from existing conditions. Furthermore, there will not be a substantial increase to the amount of impervious area. Approximately 1.16 acres of open ground will be converted to impervious surface created by the future development of 3 single-family homes, thus representing a change of 2.93% to the impervious area. This change in land use will not significantly increase the composite runoff coefficient of the project. Also, the peak flow rate will not significantly increase.

## 1.2 Beneficial Uses

The beneficial uses for the hydrologic unit are included in Tables 1.1 and 1.2. These tables have been extracted from the Water Quality Control Plan for the San Diego Basin.

**MUN – Municipal and Domestic Supply:** Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.

**AGR – Agricultural Supply:** Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

**IND – Industrial Services Supply:** Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

**REC1 – Contact Recreation:** Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.

**REC2 – Non-Contact Recreation:** Includes the uses of water for recreational involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

**WARM – Warm Freshwater Habitat:** Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates.

**WILD – Wildlife Habitat:** Includes uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

### 1.2.1 Inland Surface Waters

Inland Surface waters have the following beneficial uses as shown on table 1.1

Table 1.1 Beneficial Uses for Inland Surface Waters

Hydrologic Unit Number	Municipal & Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Hydropower Generation	Navigation	Freshwater Replenishment
903.14	*	X	X				

Hydrologic Unit Number	Contact Water Recreation	Non-Contact Water Recreation	Commercial And Sport Fishing	Biological Habitats of Special Significance	Warm Freshwater Habitat	Cold Freshwater Habitat
903.14	X	X			X	

Hydrologic Unit Number	Wildlife Habitat	Rare, Threatened, Or Endangered	Marine Habitat	Migration of Aquatic Organisms	Aquaculture	Shellfish Harvesting
903.14	X					

### 1.2.2 Groundwater

Groundwater beneficial uses includes agricultural and potentially municipal and industrial, none of these beneficial uses will be impaired or diminish due to the construction and operation of this project.

Table 1.2 Beneficial Uses for Groundwater

Hydrologic Unit Number	Municipal & Domestic Supply	Agricultural Supply	Industrial Service Supply	Industrial Process Supply	Hydropower Generation	Navigation	Freshwater Replenishment
903.14	X	X	X				

Hydrologic Unit Number	Contact Water Recreation	Non-Contact Water Recreation	Commercial And Sport Fishing	Biological Habitats of Special Significance	Warm Freshwater Habitat	Cold Freshwater Habitat
903.14						

Hydrologic Unit Number	Wildlife Habitat	Rare, Threatened, Or Endangered	Marine Habitat	Migration of Aquatic Organisms	Aquaculture	Shellfish Harvesting
903.14						

#### \*Excepted from Municipal

X Existing Beneficial Use

0 Potential Beneficial Use

## **2.0 CHARACTERIZATION OF PROJECT RUNOFF**

According to the California 1998 303d list published by the San Diego Regional water Quality Control Board, there are no impaired waterbodies that are associated with this project.

- The project location and watersheds have been compared to the current published 303d list of impaired water bodies and the nearest impaired water body is the Pacific Ocean at the San Luis Rey River Mouth, impaired by Coliform Bacteria.
- This project is 17 miles upstream from the nearest listed water body with significant natural and man-made features (sinks, infiltration areas, ponds or impoundments, vegetated swale or wetland, or media filtration devices) located between.

### **2.1 Expected Discharges**

There are no sampling data available for the existing site condition. In addition, the project is not expected to generate significant amounts of non-visible pollutants. However, the following constituents are commonly found on similar developments and could affect water quality:

- Sediment discharge due to construction activities & post-construction areas left bare.
- Nutrients from fertilizers.
- Trash and debris deposited in drain inlets.
- Hydrocarbons from paved areas.
- Pesticides from landscaping and home use.
- Oxygen demanding Substances
- Oil and Grease
- Bacteria and Viruses

### **2.2 Soil Characteristics**

The project area consists of soil group C. For additional information see Hydrology Study.

## **3.0 MITIGATION MEASURES TO PROTECT WATER QUALITY**

To address water quality for the project, BMPs will be implemented during construction and post-construction.

### **3.1 Existing and Post-Construction Drainage**

The proposed project will not significantly alter drainage patterns on the site. The stormwater discharge points will not divert runoff from existing conditions. Furthermore, there will not be a substantial increase to the amount of impervious area. Approximately 1.16 acres of open ground will be converted to impervious three single-family residential homes, thus representing a change of 2.93% to impervious area. Pre construction impervious area is approximately 1.47% of the total acres on site. This change in land use will increase the composite runoff coefficient, of the project, from  $C=0.309$  to  $C=0.325$ . The present peak flows cannot be determined since the site is located atop a hill and all flows are sheet flow. A detailed description of the drainage patterns and flows are discussed in the Hydrology Study contained within this SWMP.

Post-construction runoff will be directed away from the single-family residents and driveways and back to the natural environment serving as a bio-swale. This system will not divert water from its natural outlet points. The preliminary design of this system is included in the BMP map. Summaries of the post-construction water quality flows are included in Table 3.1. The flows were developed using the 85<sup>th</sup> Percentile Precipitation map.

**Table 3.1 Post-Construction Water Quality Flows**

Outfall	Tributary Area (acres)	Q <sub>100</sub> (cfs) POST	Q <sub>WQ</sub> (cfs)	Q <sub>100</sub> (cfs) PRE
Q1	1.85	4.38	1.19	11.30
Q2	2.00	4.77	1.29	16.14

### **3.2 Construction BMPs**

A detailed description of the construction BMPs will be developed during the Grading Plan and Improvement Plan Engineering. Since the project is in the preliminary development phase only a listing of potential types of temporary BMPs are available. This includes the following:

- Silt Fence
- Gravel Bag Berm
- Street Sweeping and Vacuuming
- Storm Drain Inlet Protection
- Material Delivery and Storage
- Stockpile Management
- Spill Prevention and Control
- Solid Waste Management
- Stabilized Construction Entrance/Exit
- Water Conservation Practices
- Permanent Revegetation of all disturbed uncovered areas
- Erosion Control Mats and Spray-on Applications

Construction BMPs for this project will be selected, constructed, and maintained so as to comply with all applicable ordinances and guidance documents.

### **3.3 Post-construction BMP's**

Pollutants of concern as noted in Section 3.2 will be addressed through three types of BMPs. These types of BMPs are site design, source control and treatment control.

#### **3.3.1 Site Design BMPs**

The project is designed to minimize the use of impervious areas. Impervious surfaces comprise approximately 4.4 %. Landscaping of the common areas is incorporated into the plans. The landscaping will consist of both native and non-native plants. The goal is to achieve plant establishment expeditiously to reduce erosion. The irrigation system for these landscaped areas will be monitored to reduce over irrigation.

#### **3.3.2 Source Control BMPs**

As shown in Attachment A, the proposed roadway will be constructed without curbs. The road and pad runoff will be directed to bio-swales.

A "Homeowner Manual" will be distributed to new homeowners that contain the educational material in Attachment E addressing control of household pollutants.

BMP			YES	NO	N/A
1.	<b><u>Provide Storm Drain System Stenciling and Signage</u></b>				<b>X</b>
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.			
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			
2.	<b><u>Design Trash Storage Areas to Reduce Pollution Introduction</u></b>				<b>X</b>
	2.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,			
	2.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.			
3.	<b><u>Use Efficient Irrigation Systems &amp; Landscape Design</u></b>				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.		<b>X</b>		
	3.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	<b>X</b>		
	3.b.	Designing irrigation systems to each landscape area's specific water requirements.	<b>X</b>		
	3.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.	<b>X</b>		
	3.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.		<b>X</b>	
4.	<b><u>Private Roads</u></b>				
	The design of private roadway drainage shall use at least one of the following				
	4.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	<b>X</b>		
	4.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.		<b>X</b>	
	4.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.		<b>X</b>	
	4.d.	Other methods that are comparable and equally effective within the project.		<b>X</b>	
5.	<b><u>Residential Driveways &amp; Guest Parking</u></b>				
	The design of driveways and private residential parking areas shall use one at least of the following features.				



BMP			YES	NO	N/A
	5.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.	X		
	5.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.		X	
	5.c.	Other features which are comparable and equally effective.		X	
6.	<b>Vehicle Wash Areas</b>				
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.				
	6.a.	Self-contained; or covered with a roof or overhang.			X
	6.b.	Equipped with a clarifier or other pretreatment facility.			
	6.c.	Properly connected to a sanitary sewer.			
	6.d.	Other features which are comparable and equally effective.			
7.	<b>Equipment Wash Areas</b>				
	Outdoor equipment/accessory washing and steam cleaning activities shall be.				X
	7.a.	Be self-contained; or covered with a roof or overhang.			
	7.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	7.c.	Be properly connected to a sanitary sewer.			
	7.d.	Other features which are comparable or equally effective.			
8.	<b>Parking Areas</b>				
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.				
	8.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.		X	
	8.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.		X	
	8.c.	Other design concepts that are comparable and equally effective.		X	

### 3.3.3 Treatment Control BMPs

Bio-Filters will be implemented to address water quality: Placements of the BMPs are noted on the project plan (Attachment B). The Bio-filtration swales will be constructed as part of the pad grading and will have a negligible cost.

### 3.3.4 Bio-Filters

Bio-filtration swales are vegetated channels that receive directed flow and convey storm water. Bio-filtration strips, also known as vegetated buffer strips, are vegetated sections of land over which storm water flows as overland sheet flow. A schematic illustration of bio-filter is shown in Figure 3.2.

Pollutants are removed by filtration through the grass, sedimentation, adsorption to soil particles, and infiltration through the soil. Swales and strips are mainly effective at removing debris and solid particles, although some dissolved constituents are removed by adsorption onto the soil.

### 3.3.5 Appropriate Applications and Siting Constraints:

Swales and strips are proposed since site conditions and climate allow vegetation to be established and flow velocities are not high enough to cause scour. A 50-foot long bio-swale is proposed beyond the riprap areas. Even where strips cannot be sited to accept directed sheet flow from the new paved road, vegetated areas provide treatment of rainfall and reduce the overall impervious surface.

**Table 3.1 Enhanced Treatment Control BMP Selection Matrix**

<u>Pollutant of Concern</u>	<u>Treatment Control BMP Categories</u>						
	<u>Biofilters</u>	<u>Detention Basins</u>	<u>Infiltration Basins<sup>(2)</sup></u>	<u>Wet Ponds or Wetlands</u>	<u>Drainage Inserts</u>	<u>Filtration</u>	<u>Continuous Flow Deflection Systems<sup>(3)</sup></u>
<u>Sediment</u>	<u>M</u>	<u>H</u>	<u>H</u>	<u>H</u>	<u>M</u>	<u>H</u>	<u>M</u>
<u>Nutrients</u>	<u>L</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>L</u>
<u>Heavy Metals</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>H</u>	<u>M</u>	<u>H</u>	<u>L</u>
<u>Organic Compounds</u>	<u>U</u>	<u>U</u>	<u>U</u>	<u>U</u>	<u>L</u>	<u>M</u>	<u>L</u>
<u>Trash &amp; Debris</u>	<u>L</u>	<u>H</u>	<u>U</u>	<u>U</u>	<u>M</u>	<u>H</u>	<u>M</u>
<u>Oxygen Demanding Substances</u>	<u>L</u>	<u>M</u>	<u>M</u>	<u>M</u>	<u>L</u>	<u>M</u>	<u>L</u>
<u>Bacteria</u>	<u>U</u>	<u>U</u>	<u>H</u>	<u>U</u>	<u>L</u>	<u>M</u>	<u>L</u>
<u>Oil &amp; Grease</u>	<u>M</u>	<u>M</u>	<u>U</u>	<u>U</u>	<u>L</u>	<u>H</u>	<u>L</u>
<u>Pesticides</u>	<u>U</u>	<u>U</u>	<u>U</u>	<u>U</u>	<u>L</u>	<u>U</u>	<u>L</u>
<p>(1) The County will periodically assess the performance characteristics of many of these BMPs to update this table.</p> <p>(2) Including trenches and porous pavement.</p> <p>(3) Also known as hydrodynamic devices and baffle boxes.</p> <p>L (Low): Low removal efficiency</p> <p>M (Medium): Medium removal efficiency</p> <p>H (High): High removal efficiency</p> <p>U: Unknown removal efficiency, applicant must provide evidence supporting use</p> <p>Sources: <i>Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters</i> (1993), <i>National Stormwater Best Management Practices Database</i> (2001), and <i>Guide for BMP Selection in Urban Developed Areas</i> (2001).</p>							

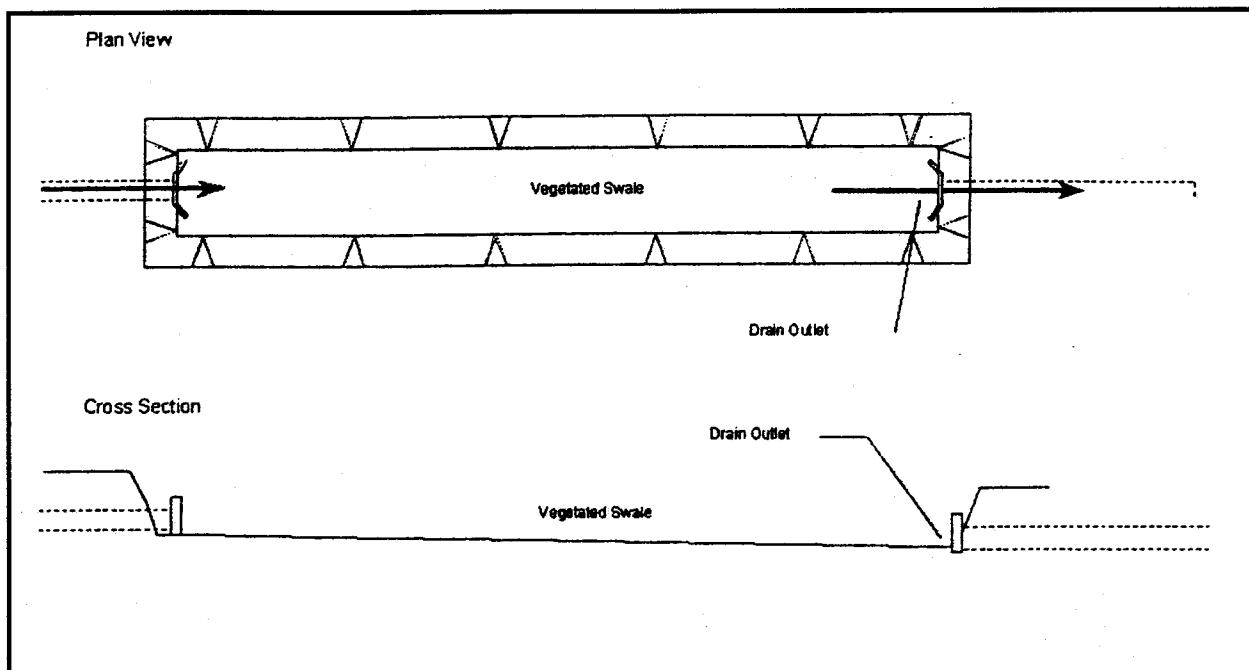
### FACTORS AFFECTING PRELIMINARY DESIGN:

Swales have two design goals: 1) maximize treatment, 2) provide adequate hydraulic function for flood routing, adequate drainage and scour prevention. Treatment is maximized by designing the flow of water through the swale to be as shallow and long as site constraints allow. No

minimum dimensions are required for treatment purposes, as this could exclude swales from consideration at some sites. Swales should also be sized as a conveyance system calculated according to County procedures for flood routing and scour.

To maximize treatment efficiency, strips should be designed to be as long (in the direction of flow) and as flat as the site will allow. No minimum lengths or maximum slopes are required for treatment purposes. The area to be used for the strip should be free of gullies or rills that can concentrate overland flow and cause erosion.

Vegetation mixes appropriate for various climates and locations will be developed by District landscape staff. Table 3.2 summarizes preliminary design factors for bio-filtration.



**Figure 3.2**  
**Example of Bio-swale Schematic**

**Table 3.2: Summary of Bio-filtration Design Factors (Strips and Swales)**

Description	Applications/Siting	Preliminary Design Factors
Swales are vegetated channels that receive and convey storm water.	<ul style="list-style-type: none"> <li>Site conditions and climate allow vegetation to be established</li> </ul>	<ul style="list-style-type: none"> <li>Swales sized as a conveyance system (per County flood routing and scour procedures)</li> </ul>
Strips are vegetated buffer strips over which storm water flows as sheet flow.	<ul style="list-style-type: none"> <li>Flow velocities not high enough to cause scour</li> </ul>	<ul style="list-style-type: none"> <li>Swales sized as a conveyance system (per County flood routing and scour procedures)</li> </ul>
Treatment Mechanisms: <ul style="list-style-type: none"> <li>Filtration through the grass</li> <li>Sedimentation</li> </ul>		<ul style="list-style-type: none"> <li>Swale water depth as shallow as the site will permit</li> </ul>

<ul style="list-style-type: none"> <li>• Adsorption to soil particles</li> <li>• Infiltration</li> </ul> <p>Pollutants removed:</p> <ul style="list-style-type: none"> <li>• Debris and solid particles</li> <li>• Some dissolved constituents</li> </ul>		<ul style="list-style-type: none"> <li>• Strips sized as long (in direction of flow) and flat as the site allows</li> <li>• Strips should be free of gullies or rills</li> <li>• No minimum dimensions or slope restrictions for treatment purposes</li> <li>• Vegetation mix appropriate for climates and location</li> </ul>
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#### 4.0 OPERATION AND MAINTENANCE PROGRAM

The operation and maintenance requirements for each type of BMP will be a condition of the CC&R's for the project. Each of the 3 new homeowners will be required to maintain their bio-swale.

CATEGORY	SELECTED	
	YES	NO
First	X	
Second		X
Third		X
Fourth		X

#### 4.1 Bio-Filters

The operational and maintenance needs of bio-swale are:

- Vegetation management to maintain adequate hydraulic functioning and to limit habitat for disease-carrying animals.
- Animal and vector control.
- Periodic sediment removal to optimize performance.
- Trash, debris, grass trimmings, tree pruning, and leaf collection and removal to prevent obstruction of a swale and monitoring equipment.
- Removal of standing water, which may contribute to the development of aquatic plant communities or mosquito breeding areas.
- Removal of graffiti.
- Preventive maintenance on sampling, flow measurement, and associated BMP equipment and structures.
- Erosion and structural maintenance to prevent the loss of soil and maintain the performance of the swale.

#### Inspection Frequency

The facility will be inspected and inspection visits will be completely documented:

- Once a month at a minimum.
- After every large storm (after every storm monitored or those storms with more than 0.50 inch of precipitation.)
- On a weekly basis during extended periods of wet weather.

### **Aesthetic and Functional Maintenance**

Aesthetic maintenance is important for public acceptance of stormwater facilities.

Functional maintenance is important for performance and safety reasons.

Both forms of maintenance will be combined into an overall Stormwater Management System Maintenance.

### **Aesthetic Maintenance**

The following activities will be included in the aesthetic maintenance program:

- Graffiti Removal. Graffiti will be removed in a timely manner to improve the appearance of a Swale and to discourage additional graffiti or other acts of vandalism.
- Grass Trimming. Trimming of grass will be done on the swale, around fences, at the inlet and outlet structures, and sampling structures. Weed Control. Weeds will be removed through mechanical means. Herbicide will not be used because these chemicals may impact the water quality monitoring.

### **Functional Maintenance**

Functional maintenance has two components:

- Preventive maintenance
- Corrective maintenance

### **Preventive Maintenance**

Preventive maintenance activities to be instituted at a swale are:

- Grass Mowing. Vegetation seed mix within the swale is designed to be kept short to maintain adequate hydraulic functioning and to limit the development of faunal habitats.
- Trash and debris. During each inspection and maintenance visit to the site, debris and trash removal will be conducted to reduce the potential for inlet and outlet structures and other components from becoming clogged and inoperable during storm events.
- Sediment Removal. Sediment accumulation, as part of the operation and maintenance program at a swale, will be monitored once a month during the dry season, after every large storm (0.50 inch), and monthly during the wet season. Specifically, if sediment reaches a level at or near plant height, or could interfere with flow or operation, the sediment will be removed. If accumulation of debris or sediment is determined to be the cause of decline in design performance, prompt action (i.e., within ten working days) will be taken to restore the swale to design performance standards. Actions will include using additional fill and vegetation and/or removing accumulated sediment to correct channeling or ponding. Characterization and Appropriate disposal of sediment will comply with applicable local,

county, state, or federal requirements. The swale will be regraded, if the flow gradient has changed, and then replanted with sod.

- Removal of Standing water. Standing water must be removed if it contributes to the development of aquatic plant communities or mosquito breeding areas.
- Mechanical and Electronic Components. Regularly scheduled maintenance will be performed on fences, gates, locks, and sampling and monitoring equipment in accordance with the manufacturers' recommendations. Electronic and mechanical components will be operated during each maintenance inspection to assure continued performance.
- Fertilization and Irrigation. The vegetation seed mix has been designed so that fertilization and irrigation is not necessary. Fertilizers and irrigation will not be used to maintain the vegetation.
- Elimination of Mosquito Breeding Habitats. The most effective mosquito control program is one that eliminates potential breeding habitats.

### **Corrective Maintenance**

Corrective maintenance is required on an emergency or non-routine basis to correct problems and to restore the intended operation and safe function of a Swale. Corrective maintenance activities include:

- Removal of Debris and Sediment. Sediment, debris, and trash, which impede the hydraulic functioning of a Swale and prevent vegetative growth, will be removed and properly disposed. Temporary arrangements will be made for handling the sediments until a permanent arrangement is made. Vegetation will be reestablished after sediment removal.
- Structural Repairs. Once deemed necessary, repairs to structural components of a Swale and its inlet and outlet structures will be done within 10 working days. Qualified individuals (i.e., the designers or contractors) will conduct repairs where structural damage has occurred.
- Embankment and Slope Repairs. Once deemed necessary, damage to the embankments and slopes of Swales will be repaired within 10 working days).
- Erosion Repair. Where a reseeding program has been ineffective, or where other factors have created erosive conditions (i.e., pedestrian traffic, concentrated flow, etc.), corrective steps will be taken to prevent loss of soil and any subsequent danger to the performance of a Swale. There are a number of corrective actions that can be taken. These include erosion control blankets, riprap, sodding, or reduced flow through the area. Designers or contractors will be consulted to address erosion problems if the solution is not evident.
- Fence Repair. Repair of fences will be done within 30 days to maintain the security of the site.
- Elimination of Animal Burrows. Animal burrows will be filled and steps taken to remove the animals if burrowing problems continue to occur (filling and compacting). If the problem persists, vector control specialists will be consulted regarding removal steps. This consulting is necessary as the threat of rabies in some areas may necessitate the animals being destroyed rather than relocated. If the BMP performance is affected, abatement will begin. Otherwise, abatement will be performed annually in September.
- General Facility Maintenance. In addition to the above elements of corrective maintenance, general corrective maintenance will address the overall facility and its associated

components. If corrective maintenance is being done to one component, other components will be inspected to see if maintenance is needed.

### **Debris and Sediment Disposal**

Waste generated at Swales is ultimately the responsibility of each property owner of the 4 proposed new lots. Disposal of sediment, debris, and trash will comply with applicable local, county, state, and federal waste control programs.

### **Hazardous Waste**

Suspected hazardous wastes will be analyzed to determine disposal options. Hazardous wastes generated onsite will be handled and disposed of according to applicable local, state, and federal regulations. A solid or liquid waste is considered a hazardous waste if it exceeds the criteria listed in the CCR, Title 22, Article 11.

## **5.0 FISCAL RESOURCES**

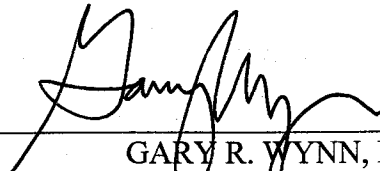
Sources of reference include: 1) Subdivision Ordinance section 81.303 "Grading Plan" and section 81.605 "Grading Plan," 2) County Watershed Protection, Storm Water Management, and Discharge Control Ordinance, and 3) Caltrans Storm Water Quality Handbook.

Estimated construction cost for each Bio-filtration Swale will range from \$500 to \$750. This is based upon Table F-6: Treatment BMPs Installed Costs, found in Appendix F of the Caltrans Storm Water Quality Handbook. Property owners will be required to maintain their own swale. Since this is a minor development with the nearest impacted water body 23 miles away: and since vegetated areas provide treatment as well, no financing for the maintenance of the BMP's is proposed.

## **6.0 CONCLUSION**

The combination of proposed construction and post-construction BMPs will reduce, to the maximum extent practicable, the expected pollutants and will not adversely impact the beneficial uses or water quality of the receiving waters.

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

  
\_\_\_\_\_  
GARY R. WYNN, P.E.

2-8-07  
\_\_\_\_\_  
DATE

# **ATTACHMENT A**

## **VICINITY MAP AND TENTATIVE PARCEL MAP**



## **ATTACHMENT B**

### **BMP DATASHEETS / BMP MAP**

**3324 B.1 TREATMENT BMPs**

3325 The Treatment Best Management Practices (BMPs) listed in Table 2-5 of this document will be  
3326 considered for projects discharging directly or indirectly to receiving waters. These BMPs have  
3327 been approved for statewide use and will be considered in all proposed new construction and  
3328 major reconstruction projects. This Appendix provides design guidelines for the approved  
3329 Treatment BMPs.

**3330 B.2 BIOFILTRATION STRIPS AND SWALES****3331 (VEGETATED TREATMENT SYSTEMS)****3332 Description:**

3333 Biofiltration swales are vegetated channels that receive directed flow and convey storm  
3334 water. Biofiltration strips, also known as vegetated buffer strips, are vegetated sections  
3335 of land over which storm water flows as overland sheet flow.

3336 Pollutants are removed by filtration through the grass, sedimentation, adsorption to soil  
3337 particles, and infiltration through the soil. Strips and swales are mainly effective at  
3338 removing debris and solid particles, although some dissolved constituents are removed by  
3339 adsorption onto the soil.

**3340 Appropriate Applications and Siting Criteria:**

3341 Strips and swales should be considered wherever site conditions and climate allow  
3342 vegetation to be established and where flow velocities are not high enough to cause  
3343 scour. Even where strips cannot be sited to accept directed sheet flow, vegetated areas  
3344 provide treatment of rainfall and reduce the overall impervious surface.

**3345 Factors Affecting Preliminary Design:**

3346 Swales have two design goals: 1) maximize treatment, and 2) provide adequate hydraulic  
3347 function for flood routing, adequate drainage and scour prevention. Treatment is  
3348 maximized by designing the flow of water through the swale to be as shallow and long as  
3349 site constraints allow. No minimum dimensions are required for treatment purposes, as  
3350 this could exclude swales from consideration at some sites. Swales should also be sized  
3351 as a conveyance system calculated according to Caltrans procedures for flood routing and  
3352 scour.

3353 To maximize treatment efficiency, strips should be designed to be as long (in the  
3354 direction of flow) and as flat as the site will allow. No minimum lengths are required for  
3355 treatment purposes and no maximum slope has been established. The maximum length  
3356 will be the sheet flow regime length dependent on site conditions (not more than 0.1 km  
3357 [300 feet {ft}] and normally much less). The area to be used for the strip should be free  
3358 of gullies or rills that can concentrate overland flow and cause erosion.



3359 Vegetation mixes appropriate for various climates and locations will be developed by the  
 3360 District Landscape Architect. Table B-1 summarizes preliminary design factors for  
 3361 biofiltration.

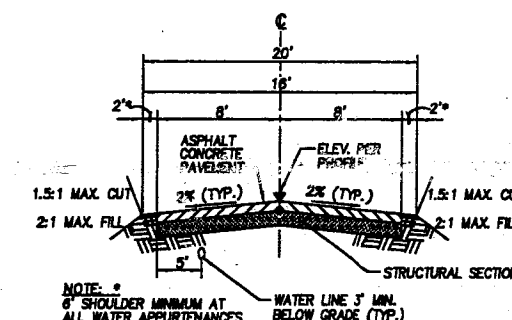
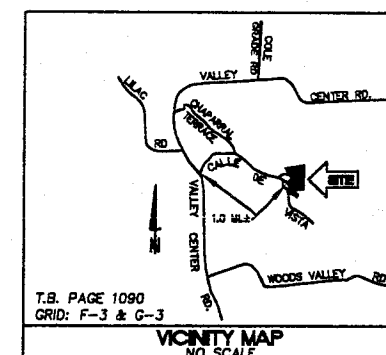
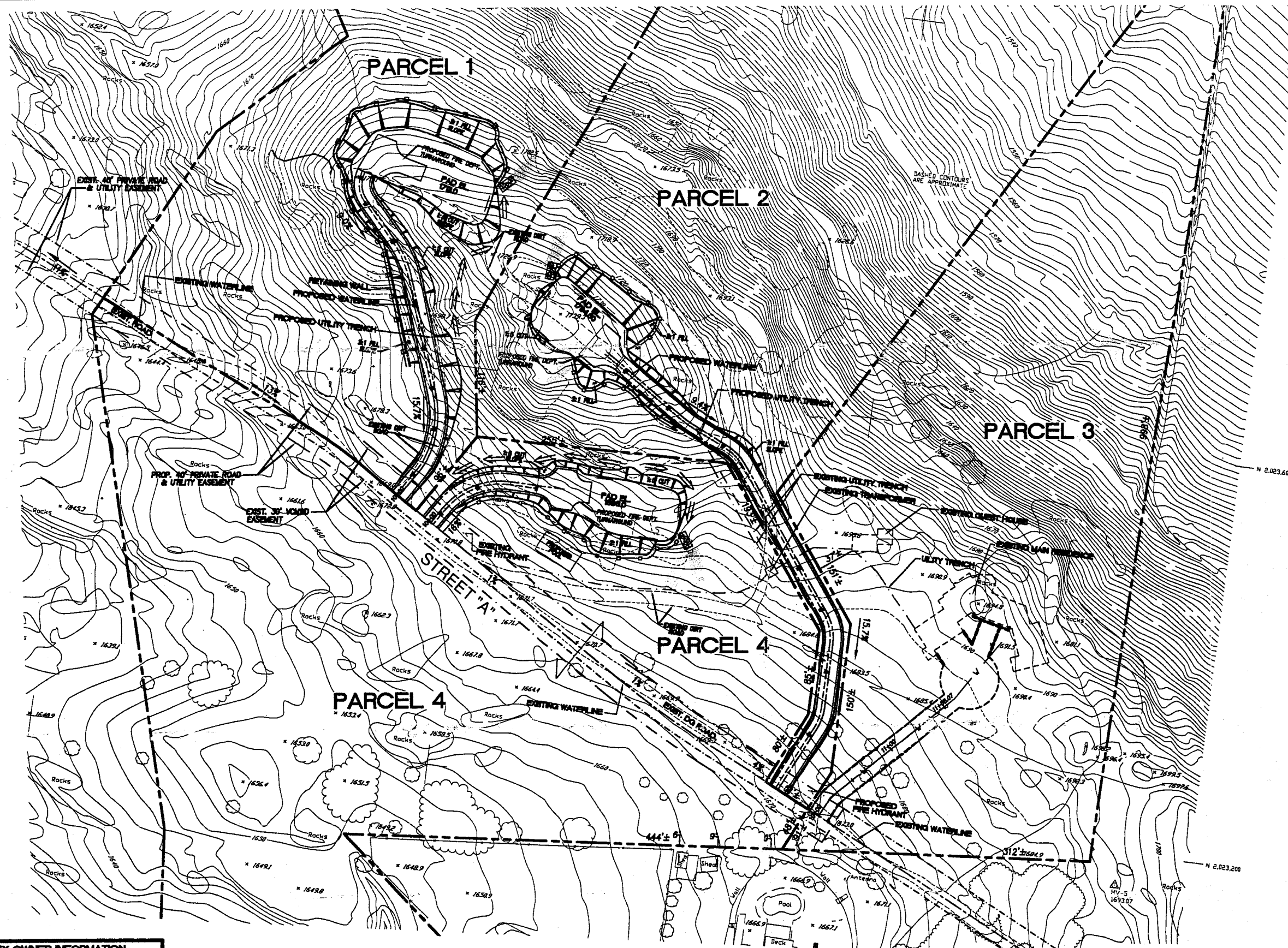
**Table B-1: Summary of Biofiltration (Strips And Swales)**

Description	Applications/Siting	Preliminary Design Factors
<p>Swales are vegetated channels that receive and convey storm water. Strips are vegetated buffer strips over which storm water flows as sheet flow.</p> <p>Treatment Mechanisms:</p> <ul style="list-style-type: none"> <li>• Filtration through the grass</li> <li>• Sedimentation</li> <li>• Adsorption to soil particles</li> <li>• Infiltration</li> </ul> <p>Pollutants removed:</p> <ul style="list-style-type: none"> <li>• Debris and solid particles</li> <li>• Some dissolved constituents</li> </ul>	<ul style="list-style-type: none"> <li>• Site conditions and climate allow vegetation to be established</li> <li>• Consider where flow velocities will not cause scour</li> </ul>	<ul style="list-style-type: none"> <li>• Swales sized as a conveyance system (per Caltrans flood routing and scour procedures)</li> <li>• Swale water depth as shallow as the site will reasonably permit</li> <li>• Strips sized as long (in direction of flow) and flat as the site will reasonably allow up to sheet flow boundaries</li> <li>• Strips should be free of gullies or rills</li> <li>• Strips should be as wide as possible, subject to Caltrans drainage standards</li> <li>• No minimum dimensions or slope restrictions for treatment purposes</li> <li>• Vegetation mix appropriate for climates and location</li> <li>• Maximum length of Bio Strip is 91 m (300 ft)</li> </ul>

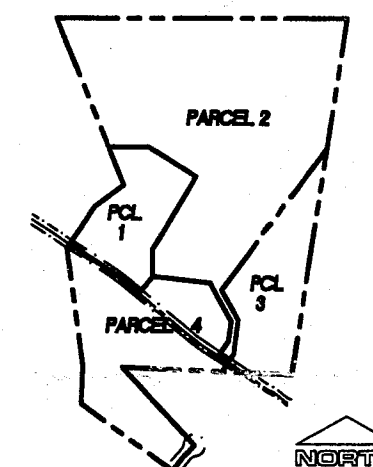
## 3362 B.3 INFILTRATION BASINS

### 3363 B.3.1 Description and Applications

3364 An infiltration basin is a device designed to remove pollutants from surface discharges by  
 3365 capturing the Water Quality Volume (WQV) and infiltrating it directly to the soil rather than  
 3366 discharging to receiving waters. A conceptual schematic illustration of an infiltration basin is  
 3367 shown in Figure B-1.



PRIVATE DRIVE TYPICAL SECTION  
NOT TO SCALE



**PROPERTY OWNER INFORMATION**  
NAME: MR. STEVEN J. SOURIS  
ADDRESS: P.O. BOX 1798  
VALLEY CENTER, CA 92082  
TELEPHONE NUMBER: 1-760-420-7630  
(24 HOUR CONTACT NUMBER)  
SITE A.P.N. NUMBER: 188-012-88  
SITE ADDRESS: CALLE DE VISTA  
VALLEY CENTER, CALIFORNIA 92082

TOPO:  
PROVIDED BY ZENITH AERIAL, INC.  
SCANNED BY SCANTECH

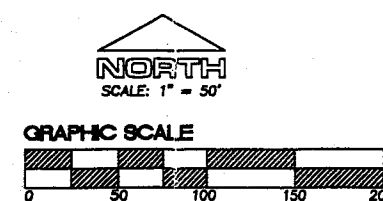
**GRADING (C.Y.)**

TOTAL CUT = 2,650 C.Y.  
TOTAL FILL = 2,650 C.Y.  
IMPORT/EXPORT = 0 C.Y.

**LEGEND**

BROW DITCH PER D-75  
RIP-RAP ENERGY DISSIPATOR  
DIRECTION OF FLOW (1% MIN.)  
SILT FENCE  
BIO-SWALE (4'x50')

NOTE:  
GRADING AND DRAINAGE SHOWN HEREON IS CONCEPTUAL. THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMITS BEFORE COMMENCING SUCH ACTIVITY.



**WYNN ENGINEERING, INC.**  
27825 VALLEY CENTER ROAD, STE. B, VALLEY CENTER, CA 92082  
(760) 748-8722 (310) 308-8728 FAX (760) 748-9412

J.B.M. WEI JOB NO. 03-334 3-23-04 B-125

**PRIVATE CONTRACT**

COUNTY OF SAN DIEGO  
DEPARTMENT OF PLANNING AND LAND USE  
**PRELIMINARY GRADING PLAN FOR**  
**SOURIS TENTATIVE PARCEL MAP**  
SHEET: 1 OF 1  
CALIF. COORD. INDEX: 378-1781  
APPROVED  
DIRECTOR OF PLANNING AND LAND USE  
BY: DATE:

## **ATTACHMENT C**

### **WATERSHEDS and SURFACE WATER BODIES Within Project Area**

## project clean water

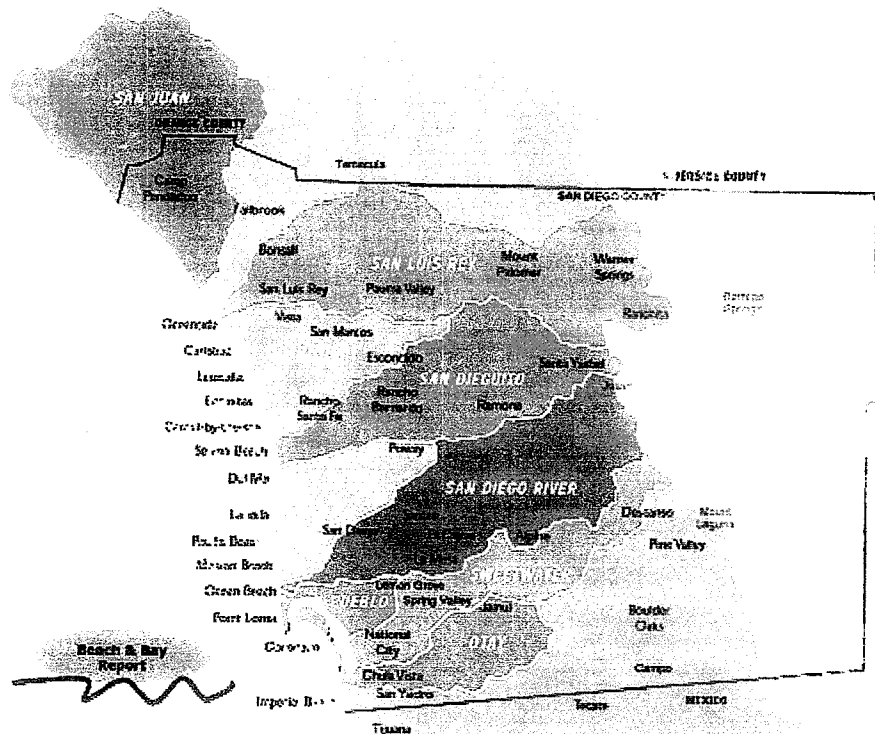


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[Watersheds](#)  
[San Juan](#)  
[Santa Margarita](#)  
[San Luis Rey](#)  
[Carlsbad](#)  
[San Dieguito](#)  
[Penasquitos](#)  
[San Diego](#)  
[Pueblo](#)  
[Sweetwater](#)  
[Otay](#)  
[Tijuana](#)  
[For Kids](#)  
[Bulletin Board](#)  
[Links](#)  
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clean water through local commitment and action

## Major Watersheds in the San Diego Region

Click on desired watershed for detailed information



Different geographical regions have different water quality issues. To address the local issues, and assist in managing the region, watersheds are delineated. Watersheds are simply the land area in which water is captured and converged.

Land areas in San Diego Hydrologic Region (SDHR), west of the highest ridge of the Cuyamaca Mountains, each drain toward the Pacific Ocean; those areas east of that ridge drain toward Imperial County. Find out more about watersheds.

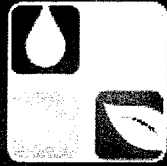
### Natural Resource Project Inventory database



To query or add your project to the Natural Resource Project Inventory database Please go to the NRPI website.

## project clean water

clean water through local commitment and action



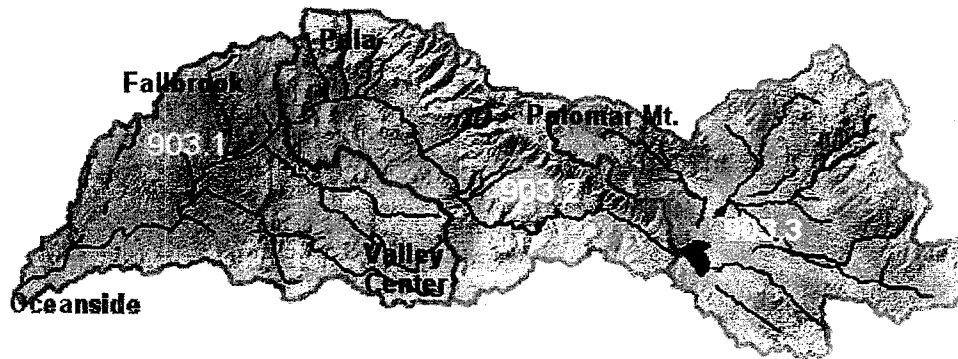
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## San Luis Rey Watershed

Plan

Projects

Activities



## Hydrologic Unit 903.11 - 903.32

<b>Hydrologic Areas:</b>	Lower San Luis 903.1 Monserate 903.2 Warner Valley 903.3
<b>Major Water Bodies:</b>	San Luis Rey River and Lake Henshaw
<b>CWA 303(d) List:</b>	Pacific Ocean at the San Luis Rey River mouth: coliform bacteria
<b>Major Impacts:</b>	Surface water quality degradation, habitat loss, invasive species, channel bed erosion
<b>Constituents of Concern:</b>	Coliform bacteria, nitrate, sediment, and pesticides
<b>Sources / Activities:</b>	agricultural / orchards, livestock / domestic animals, urban runoff, sand mining, and septic systems

The San Luis Rey River watershed is located east of the City of Oceanside in the northwestern portion of San Diego County. The 558 square mile drainage is the largest hydrologic unit in the San Diego region. The watershed drains to the Pacific Ocean to the west and is bounded by the Moserate Mountains to the north, the Cleveland National Forest and Camp Pendleton to the northwest, and Escondido, San Diego, and other cities to the south. The basin is roughly 50 miles long by 16 miles wide, and is divided into two hydrologic units by Henshaw Dam. The areas above and below the dam encompass 206 and 354 square miles, respectively (USACOE, 1977).

Approximately 92.5% of the San Luis Rey River watershed is located in unincorporated areas of San Diego County. Roughly one-fourth of the land area in the watershed is located west of Interstate 15 including portions of the cities of Oceanside and Vista, the communities of Fallbrook and Bonsall, and the southwestern portion of Camp Pendleton. The land west of I-15 has multiple uses including open space/ undeveloped, residential, commercial/ industrial, and

agricultural. East of Interstate 15, most of the land is owned and managed by government agencies (county, state, and federal), special districts, and Native American bands. The predominant land uses are open space/ undeveloped and agricultural.

Unlike most major rivers in Southern California, the San Luis Rey River has undergone relatively little channelization. The only significant segment of the river that has been channelized is within the City of Oceanside. However, the cumulative impacts of various land use practices in the basin appear to be degrading the river's environmental value. For example, an increased rate of bed erosion attributable to sand mining operations has been observed in the central reaches of the river.

There are many beneficial water uses within the San Luis Rey Watershed as designated in the State Water Resources Control Board's San Diego Region Basin Plan.



project clean water

Leadership, cooperation, and education are the most important tools we have for compelling change.

Webmaster



## **ATTACHMENT D**

### **HYDROLOGY and HYDRAULICS CALCULATIONS**

## **ATTACHMENT E**

### **HOMEOWNERS' EDUCATIONAL MATERIAL**

# ***Do's and Don'ts Around the Home***

*(taken from an EPA Journal article, November/December 1991, EPA-22K-1005)*

by Robert Goo

The importance of education in bringing nonpoint-source pollution under control is a recurring theme in this issue of EPA Journal. The reason for this is pragmatic: What you don't know can hurt the environment. When rain falls or snow melts, the seemingly negligible amounts of chemicals and other pollutants around your home and premises get picked up and carried via storm drains to surface waters. The ramifications include polluted drinking water, beach closings, and endangered wildlife.

So what can you do to help protect surface and ground waters from so-called nonpoint-source pollution? You can start at home. Begin by taking a close look at practices around your house that might be contributing to polluted runoff: You may need to make some changes. The following are some specific tips to act on--dos and don'ts, organized by categories, to help you become part of the solution rather than part of the problem of nonpoint-source pollution.

## ***Household Chemicals***

- ◆ Be aware that many chemicals commonly used around the home are toxic. Select less toxic alternatives. Use non-toxic substitutes wherever possible.
- ◆ Buy chemicals only in the amount you expect to use, and apply them only as directed. More is not better.
- ◆ Take unwanted household chemicals to hazardous waste collection centers; do not pour them down the drain. Pouring chemicals down the drain may disrupt your septic system or else contaminate treatment plant sludge.
- ◆ Never pour unwanted chemicals on the ground. Soil cannot purify most chemicals, and they may eventually contaminate runoff.
- ◆ Use low-phosphate or phosphate-free detergents.
- ◆ Use water-based products whenever possible.
- ◆ Leftover household pesticide? Do not indiscriminately spray pesticides, either indoors or outdoors, where a pest problem has not been identified. Dispose of excess pesticides at hazardous waste collection centers.
- ◆ Landscaping and gardening
- ◆ When landscaping your yard, select plants that have low requirements for water, fertilizers, and pesticides.

- ◆ Cultivate plants that discourage pests. Minimize grassed areas which require high maintenance.
- ◆ Preserve existing trees, and plant trees and shrubs to help prevent erosion and promote infiltration of water into the soil.
- ◆ Use landscaping techniques such as grass swales (low areas in the lawn) or porous walkways to increase infiltration and decrease runoff.

### ***Other landscaping tips:***

- ◆ Install wood decking or bricks or interlocking stones instead of impervious cement walkways.
- ◆ Install gravel trenches along driveways or patios to collect water and allow it to filter into the ground.
- ◆ Restore bare patches in your lawn as soon as possible to avoid erosion.
- ◆ Grade all areas away from your house at a slope of one percent or more.
- ◆ Leave lawn clippings on your lawn so that nutrients in the clippings are recycled and less yard waste goes to landfills.
- ◆ If you elect to use a professional lawn care service, select a company that employs trained technicians and follows practices designed to minimize the use of fertilizers and pesticides.
- ◆ Compost your yard trimmings. Compost is a valuable soil conditioner which gradually releases nutrients to your lawn and garden. (Using compost will also decrease the amount of fertilizer you need to apply.) In addition, compost retains moisture in the soil and thus helps you conserve water.
- ◆ Spread mulch on bare ground to help prevent erosion and runoff.
- ◆ Test your soil before applying fertilizers. Over-fertilization is a common problem, and the excess can leach into ground water or contaminate rivers or lakes. Also, avoid using fertilizers near surface waters. Use slow-release fertilizers on areas where the potential for water contamination is high, such as sandy soils, steep slopes, compacted soils, and verges of water bodies. Select the proper season to apply fertilizers: Incorrect timing may encourage weeds or stress grasses. Do not apply pesticides or fertilizers before or during rain due to the strong likelihood of runoff.
- ◆ Calibrate your applicator before applying pesticides or fertilizers. As equipment ages, annual adjustments may be needed.
- ◆ Keep storm gutters and drains clean of leaves and yard trimmings. (Decomposing vegetative matter leaches nutrients and can clog storm systems and result in flooding.)

## ***Septic Systems***

Improperly maintained septic systems can contaminate ground water and surface water with nutrients and pathogens. By following the recommendations below, you can help ensure that your system continues to function properly.

- ◆ Inspect your septic system annually.
- ◆ Pump out your septic system regularly. (Pumping out every three to five years is recommended for a three-bedroom house with a 1,000-gallon tank; smaller tanks should be pumped more often.)
- ◆ Do not use septic system additives. There is no scientific evidence that biological and chemical additives aid or accelerate decomposition in septic tanks; some additives may in fact be detrimental to the septic system or contaminate ground water.
- ◆ Do not divert stormdrains or basement pumps into septic systems.
- ◆ Avoid or reduce the use of your garbage disposal. (Garbage disposals contribute unnecessary solids to your septic system and can also increase the frequency your tank needs to be pumped.)
- ◆ Don't use toilets as trash cans! Excess solids may clog your drainfield and necessitate more frequent pumping.

## ***Water Conservation***

Homeowners can significantly reduce the volume of wastewater discharged to home septic systems and sewage treatment plants by conserving water. If you have a septic system, by decreasing your water usage, you can help prevent your system from overloading and contaminating ground water and surface water. (Seventy-five percent of drainfield failures are due to hydraulic overloading.)

- ◆ Use low-flow faucets, shower heads, reduced-flow toilet flushing equipment, and water saving appliances such as dish and clothes washers. (See table on water savings possible with conservation devices.)
- ◆ Repair leaking faucets, toilets, and pumps.
- ◆ Use dishwashers and clothes washers only when fully loaded.
- ◆ Take short showers instead of baths and avoid letting faucets run unnecessarily.
- ◆ Wash your car only when necessary; use a bucket to save water. Alternatively, go to a commercial carwash that uses water efficiently and disposes of runoff properly.
- ◆ Do not over-water your lawn or garden. Over-watering may increase leaching of fertilizers to ground water.
- ◆ When your lawn or garden needs watering, use slow-watering techniques such as trickle irrigation or soaker hoses. (Such devices reduce runoff and are 20-percent more effective than sprinklers.)

## ***Other Areas Where You Can Make a Difference***

- ◆ Clean up after your pets. Pet waste contains nutrients and pathogens that can contaminate surface water.
- ◆ Drive only when necessary. Driving less reduces the amount of pollution your automobile generates. Automobiles emit tremendous amounts of airborne pollutants, which increase acid rain; they also deposit toxic metals and petroleum byproducts into the environment. Regular tuneups and inspections can help keep automotive waste and byproducts from contaminating runoff. Clean up any spilled automobile fluids.
- ◆ Recycle used oil and antifreeze by taking them to service stations and other recycling centers. Never put used oil or other chemicals down stormdrains or in drainage ditches. (One quart of oil can contaminate up to two million gallons of drinking water!)

## ***Community Action***

- ◆ Participate in clean-up activities in your neighborhood.
- ◆ Write or call your elected representatives to inform them about your concerns and encourage legislation to protect water resources.
- ◆ Get involved in local planning and zoning decisions and encourage your local officials to develop erosion and sediment control ordinances.
- ◆ Promote environmental education. Help educate people in your community about ways in which they can help protect water quality. Get your community groups involved.

*(Goo is an Environmental Protection Specialist in EPA's Nonpoint-Source Control Branch.)*

## Automotive Fluids

When it rains or when water flows out of yards or over pavement, it flows directly into storm drains. Many people mistakenly believe this water gets "cleaned" before reaching waterways. The sewer system and the storm water conveyance systems (drains, inlets, and catch basins) are separate; they are not connected. Sewer water gets treated, but everything that washes into the storm water conveyance system goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water collection system is a violation of the City Municipal Code, (43.0301). Whether you are at home, work, or play there are ways that residents and businesses alike can "Think Blue" and prevent pollutants from reaching our waterways.

### ***Most of us don't think of our car as a source of beach pollution-- but it is.***

The reality is vehicles are a necessity today, and we don't have a lot of choice about that. However, we can be more environmentally responsible and choose the method(s) of caring for and repairing our vehicles in a more ocean friendly way.

Many automotive fluids – **Motor Oil, Anti-Freeze, Transmission Fluids, De-Greasers, Solvents** and the like are hazardous wastes. They are **hazardous** to you and me and **toxic to our environment. No one wants to swim in them.** So, make sure to prevent them from entering our storm water conveyance system.

**Automotive Maintenance and Repair:** When making repairs or performing minor maintenance on your vehicle, make sure you have protected the sidewalk, curb, street and gutter from repair fluids before beginning work. Identify the nearest storm drain and take steps to protect it from the fluids.

When changing fluids, collect the substance and other automotive materials in seal able containers. Mark the containers. Never mix different substances in one container. Store the containers in a secure location out of reach of children, animals and out of contact with water.

### **Where to Take the Pollutants:**

Motor oil, Oil filters, anti-freeze and non-leaking auto batteries are accepted at the City of San Diego **Used Oil and Filters Collection Events**. Call (619) 235-2105 for event information.

For other automotive fluids such as transmission and brake fluids, de-greasers, solvents and the like, call the City's **Household Hazardous Materials Program (619) 235-2111**, to make an appointment to drop-off the pollutants.

**Leaking Vehicles:** If your vehicle is leaking fluids, please make repairs as soon as possible. A short-term, immediate solution is to put an oil drip pan with absorbent materials under your vehicle wherever it is parked (work, home and other destinations). Until the repair is made, you must capture the leak and prevent fluids from reaching the street or gutter where it can be carried into the storm drain conveyance system and into our waterways and beaches.

**Other Fact sheets that may pertain to your activities:** *Cleaning Impervious Surfaces (High Pressure Washing); Be A Clean Water Leader: Control, Contain & Capture; Spills; and Car Washing.*

Adopt these behaviors and help Clean up our beaches and bays. Think Blue, San Diego.  
For more information, call (619) 235-1000, or log on to: [www.thinkbluesd.org](http://www.thinkbluesd.org) (03/05/02)

## Car Washing

When it rains or when water flows out of yards or over pavement, it flows directly into storm drains. Many people mistakenly believe this water gets "cleaned" before reaching waterways. The sewer system and the storm water conveyance systems (drains, inlets, and catch basins) are separate; they are not connected. Sewer water gets treated, but everything that washes into the storm water conveyance system goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water collection system is a violation of the City Municipal Code, (43.0301). Whether you are at home, work, or play, there are ways that residents and businesses alike can "Think Blue" and prevent pollutants from reaching our waterways.

Most of us don't think of our car as a source of beach pollution-- but it is. The reality is vehicles are a necessity today, and we don't have a lot of choice about that. However, we can be more environmentally responsible and choose the method(s) of caring for and washing our vehicles in an ocean friendly way. Car washing is a pollution problem because many metals and automotive fluids are washed off with the soapy water, travel down the gutter collecting more street pollutants, then enter our storm water conveyance system and spill into our waterways and bays.

**Residential/Non-Commercial Vehicles:** The Municipal Code allows for the washing of residential vehicles for non-commercial purposes. While washing of your vehicle is allowed, washing-off pollutants from your vehicle such as paint, oils, sediment, debris and such like pollutant(s) is illegal. This is why we encourage that you wash your personal vehicle without creating runoff. When washing is done at home, pollution can be minimized by washing the vehicle on the lawn or over a landscaped area to absorb the liquid and limit runoff from your property. Or, limit runoff by using a bucket and rag to wash your car and a control nozzle on your hose to rinse the car. By actively reducing the amount of water used you are not only protecting our ocean, but helping to conserve water and reducing your water bill.

**Charity Washes:** may be conducted as long as they are staged in a manner which avoids or minimizes the discharge of pollutants- soap, sediment, water that may be contaminated from automotive fluids and residues. Start by locating all storm drain inlets on, near or downstream of the wash site and sweeping up all sediment and debris in the area prior to washing the vehicles. On the day of the event, place sandbags or other blocking devices in front of the inlets to prevent wash water from entering the storm drain conveyance system. Any remaining standing wash water is to be swept or wet-vacuumed into a landscaped area or into the sanitary sewer system. We recommend the site and inlets be swept at the end of the wash event.

**Illegal Washing Activities:** Car dealerships, auto detailers, rental agencies and other automotive related businesses that wash vehicles for commercial purposes must prevent the dirty water from entering the storm water conveyance system. All washing activity for commercial purposes must control, contain and capture the wash water before it leaves the site and/or enters a storm drain or a conveyance system. Failure to do so is illegal.

Washing of all vehicles (residential and commercial) that carry items or substances that have a potential to discharge the following pollutants: paint, oils, sediment, yard waste, construction debris, chemicals, hazardous wastes and other pollutants—is illegal.

Adopt these behaviors and help Clean up our beaches and bays. Think Blue, San Diego.  
For more information, call (619) 235-1000, or log on to: [www.thinkbluesd.org](http://www.thinkbluesd.org) (03/05/02)



## **Impervious Surfaces:**

### **Cleaning Sidewalks, Pavements, Patios, Parking Lots & Driveways**

When it rains or when water flows out of yards or over pavement, it flows directly into storm drains. Many people mistakenly believe this water gets "cleaned" before reaching waterways. The sewer system and the storm water conveyance system (drains, inlets and catch basins) are separate; they are not connected. Sewer water gets treated, but everything that washes into the storm drain goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water conveyance system is a violation of the City Municipal Code (43.0301).

We all like clean public areas, but High Pressure Washing and Hosing Down of sidewalks not only contributes to ocean pollution, but wastes one of our most valuable resources – Water. It's not the water that's a problem. It's the pollutants it picks-up off of surfaces that are. In the City of San Diego, **High Pressure Washing** or **Hosing Down** surfaces in the public right-of-way will only be allowed when the following **Storm Water Best Management Practices** are used:

**Before beginning to wash impervious surfaces, sweep and pick up the debris or trash** in the area being washed, and in the curbside between the activity and downstream storm drain inlet(s). Properly dispose of the debris.

**Storm drain inlet(s) must be protected** from the water flow and the pollutants it carries. Locate the nearest downstream storm drain inlet before beginning work. Cover the inlet with fabric cloth and weigh it down with gravel bags. The debris caught in the fabric cloth can then be thrown in the trash.

**Hosing pavement in a parking lot and letting it leave the site is not allowed.** Water used to clean gas stations, automotive repair, driveway, street or any surface where motor vehicles are parked or driven must be recaptured (wet-vacuumed or mopped) and properly disposed of.

**Sweep-up and properly dispose of all sediments** that accumulate as a result of the activity.

**Disinfectants, solvents, and other household chemicals** used to aid in the cleaning process must be recaptured (mopped up or wet vacuumed) before hosing down.

**Dry clean up methods** (vacuum, sweep, and absorbents) are recommended for spills and outdoor cleaning. Where water is needed, use a mop. If hosing down is desired, follow the Best Management Practices listed above.

**Dispose of mop water** into the sanitary sewer system. That means down the sink drain, not the storm drain.

**High pressure washing or hosing of private property** must be contained, recaptured and properly disposed. Direct the water into planters, don't allow it to wash into the storm drain inlet.

**Other fact Sheets that may pertain to your activities:** *Be A Clean Water Leader: Control, Contain & Capture: Spills; Dumpsters, and Restaurants.*

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## Swimming Pools and Spas: Cleaning, Draining, and Construction

When it rains or when water flows out of yards or over pavement, it flows directly into storm drains, which are designed primarily to discharge rainwater or overflow away from homes and businesses. Many people mistakenly believe this water gets "cleaned" before reaching our waterways. The sewer system and the storm water conveyance system (drains, inlets and catch basins) are separate; they are not connected. Sewer water gets treated, but everything that washes into the storm drain goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water conveyance system is a violation of the City Municipal Code (43.0301).

Here are some answers to frequently asked questions and important **Storm Water Best Management Practices (BMPs)** to follow when **Draining a Home Swimming Pool or Spa** :

### ***Can I discharge pool or spa water into the storm drain?***

Yes, you can discharge water with no chemicals into the storm drain. The water **MUST**:

1. Be water only (cannot carry debris or vegetation with it),
2. Be dechlorinated,
3. Have an acceptable pH of 7-8,
4. Have no algae present (no "green" present),
5. Contain no chemicals to counteract the chlorine,
6. Contain no hydrogen peroxide based products,
7. Be a flow that is controlled so it doesn't cause any erosion problems.

### ***How can I get rid of the chlorine in the water?***

Chlorine naturally dissipates and over time the pool water will become dechlorinated. Monitor the pool over a period of 3 to 5 days, testing the chlorine levels. Make sure the water is drained before it turns green which indicates algae growth. Drain pool water gradually onto a landscaped area to prevent erosion problems.

***How do I clean pool filters?*** It's best to clean the pool filter over a lawn, planter box, vegetated hillside or something that absorbs the discharge. Collect materials on filter cloth, then throw the filter cloth away. **Back washing or acid cleaning is not allowed into the storm drains.** All filter backwash fluids must be discharged into the sanitary sewer via a legal sewer connection, and the backwash fluids must have a pH between 5 and 12.5 before discharging into a sewer connection. See manufacturer's specifications for information on how to check pH.

***When doing pool construction,*** all materials must be contained and disposed of properly. These materials include, but not are limited to, plaster, gunite, cement, sediment, and other such construction materials. These materials must not be discharged into the storm drains.

Adopt these behaviors and help Clean-up our beaches and bays. Think Blue, San Diego. For more information, call (619) 235-1000, or log on to: [www.thinkbluesd.org](http://www.thinkbluesd.org) (02/22/02)

## Spills

When it rains or when water flows out of yards or over pavement, it flows directly into storm drains. Many people mistakenly believe this water gets "cleaned" before reaching waterways. The sewer system and the storm water conveyance systems (drains, inlets, and catch basins) are separate; they are not connected. Sewer water gets treated, but everything that washes into the storm water conveyance system goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water collection system is a violation of the City Municipal Code, (43.0301). Whether you are at home, work, or play, there are ways that residents and businesses alike can "Think Blue" and prevent pollutants from reaching our waterways.

As hard as we try to prevent them, **Spills** happen. The primary pollution concern is to prevent the substance—water, chemical, grease, etc.—from entering the City's storm water conveyance system. A well thought out and rehearsed spill response plan will greatly reduce and often eliminate the probability of the pollutants reaching the system and polluting our recreational waters. Here are some **Storm Water Best Management Practices for cleaning-up Spills**:

**Establish a Spill Clean-up Plan-** each establishment should have a plan that includes:

- ✓ Procedures for different types of spills (hazardous materials require special response)
- ✓ Schedule for training and refresher training for employees about the procedures
- ✓ Create clean-up kits and place in well-marked areas where spills are likely to occur
- ✓ Designate a key employee(s) who will monitor clean-up
- ✓ Post the plan in a visible location in the work area

**Dry Clean-up Methods are the preferred ways to clean-up spills-**

- ✓ Don't hose down outside spills
- ✓ Use rags or absorbents – cat litter, sand, etc.-- to sop-up liquid substances. And, sweep-up and dispose of absorbents into the trash can.
- ✓ If a final rinse is necessary for health reasons, collect the rinse water and dispose of it in a sink or a sanitary sewer drain. If outdoors, block the drain before applying water, and mop or wet-vacuum the water. Dispose of the rinse water into a sink or sanitary sewer drain.
- ✓ If the substance is a hazardous waste, follow proper hazardous disposal procedures. When the status of the substance is unknown, please contact substance manufacturer or one of the following agencies for the proper disposal procedure(s):

City Household Hazardous Waste Program: (619) 235-2111

Hazardous Materials Information (619) 338-2222

**Other Fact sheets that may pertain to your activities:**

*Cleaning Impervious Surfaces (high pressure washing); Dumpsters; Be A Clean Water Leader: Control, Contain & Capture; Restaurants.*

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## Water Discharges from Private Property

When it rains or when water flows out of yards, over pavement and into streets, it flows directly into storm drains. Many people mistakenly believe this water gets cleaned or treated before reaching waterways. The truth is the sewer and water systems are separate from the storm water conveyance system. Sewer water gets treated, but everything that washes into the storm water conveyance system goes untreated directly into our rivers, creeks, bays and ocean. This causes beach closures and postings due to contamination. Releasing pollutants into the storm water collection system is a violation of the City Municipal Code, (43.0301).

Discharges from water pipes do happen. When they do occur the primary concern is not the water itself, but the substances it comes in contact with and carries to our storm water conveyance system polluting our beaches and waterways. It is imperative that these pollutants -- sediment, leaves, other organic or chemical matter -- are prevented from entering the City's storm water conveyance system. That's why when water breaks occur, it's important to control, contain and capture the overflow to prevent contamination of our beaches, bays and reservoirs. Here are some storm water Best Management Practices you can adopt to keep our water-ways clean and safe:

### Water Pipe Breaks on your property:

- Turn off water **As Soon As Possible (ASAP)** to control the flow.
- Provide containment (gravel and/or sand bags, etc.) that will prevent flow from discharging into the Storm Water Conveyance System. You may want to call a plumbing professional for assistance.
- Capture and dispose of the remaining debris (sediment, leaves, branches, trash, etc) that may be in the curb, gutter and street. Be sure to clean the curbs and gutters beyond your property – all the way to the nearest storm drain inlet.

**Property owners are responsible for the proper maintenance and repair of the water pipes that extend from the City water meter on to your property.**

**Water Pipe Breaks in the City Right-of-Way:** If you believe a water main break is effecting your property, or you see water oozing out of the ground through the pavement, please call the **Water Department emergency phone at (619) 515-3525.**

**Flushing Water Lines:** In flushing water lines, you are responsible to control, contain and capture all water and debris resulting from the activity.

### Tips to help you prepare for an overflow-

- Provide routine and regular maintenance of your water pipes
- Locate and know how to operate your water shut-off valve
- Capture excess water to use on plants, lawns and shrubs
- Use a broom and dust pan to sweep-up residue instead of water
- Don't use "storm drains" on your property or in the City Right-of-Way to dispose of debris

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